FIG.1

INPUT AND OUTPUT STREAMS OF FRAME.

INPUT STEAM

OUTPUT STREAM

BACKWARD   FORWARD
FRAME   FRAME

FIG.2

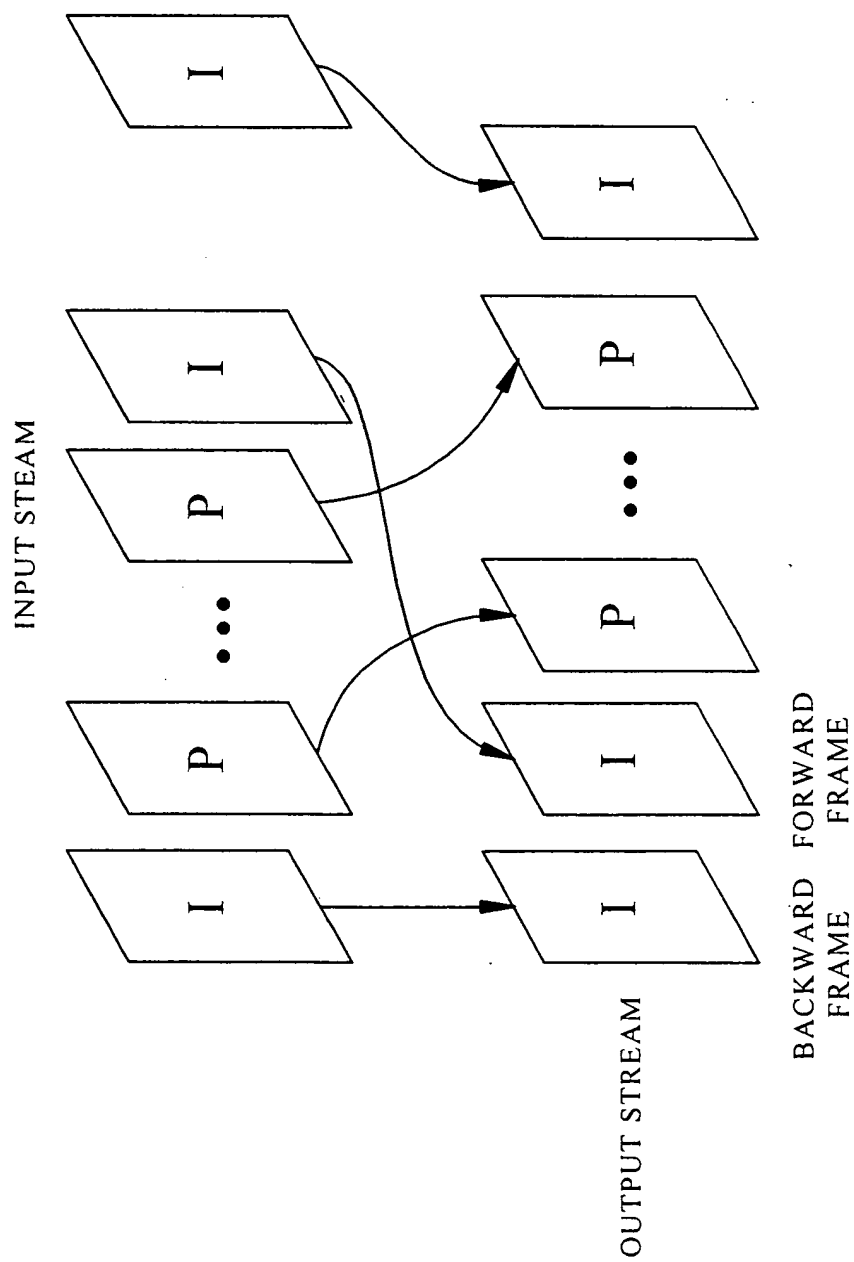PREDITION ERROR COMPUTING

ORIGINAL FRAME

WIDTH

HEIGHT

−

PREDICTED FRAME

WIDTH

PREDICTION ERROR ARRAY

WIDTH

HEIGHT

MOTION COMPENSATION SCHEME

```
┌─────────────────┐      ┌─────────────────┐      ┌─────────────────┐
│   PREDICTION    │      │   ERROR ARRAY   │      │   PREDICTION    │
│     ERROR       │─────▶│   COMPRESSING   │─────▶│     ERROE       │
│   COMPUTING     │      │                 │      │  COMPENSATING   │
└─────────────────┘      └─────────────────┘      └─────────────────┘
```

FIG.3

```
        ┌ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ┐
                  ┌─────────────────┐
        │         │   PREDICTION    │               │
                  │     ERROR       │
        │         │   QUANTIZING    │               │
                  └─────────────────┘
        │                  │                        │
                  ┌─────────────────┐
        │         │ MERGE_COMPACT   │               │
                  └─────────────────┘
        │                  │                        │
                  ┌─────────────────────┐
        │         │ NEW_MERGE_COMPACT   │           │
                  └─────────────────────┘
        │                  │                        │
                  ┌─────────────────┐
        │         │  SIGNIFICANT    │               │
                  │     AREA        │   ┌──────────────────┐
        │         │   ISOLATING     │   │ FIGURE_COVERING  │
                  └─────────────────┘   └──────────────────┘
        │                  │                        │
                  ┌─────────────────┐
        │         │   TOPOLOGY      │               │
                  │     MASK        │
        │         │  CONSTRUCTING   │               │
                  └─────────────────┘
        └ ─ ─ ─ ─ ─ ─ ─ ─ ─│─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ┘
                  ┌─────────────────┐
                  │   COMPRESSING   │
                  └─────────────────┘
```

FIG.4

MERGE COMPACT METHOD

ERROR ARRAY

g_0	g_1
g_2	g_3

G

WIDTH

HEIGHT

ARRAY AFTER MERGE_COMPACT METHOD

$E_{COMPACT}$

WIDTH / 2

HEIGHT / 2

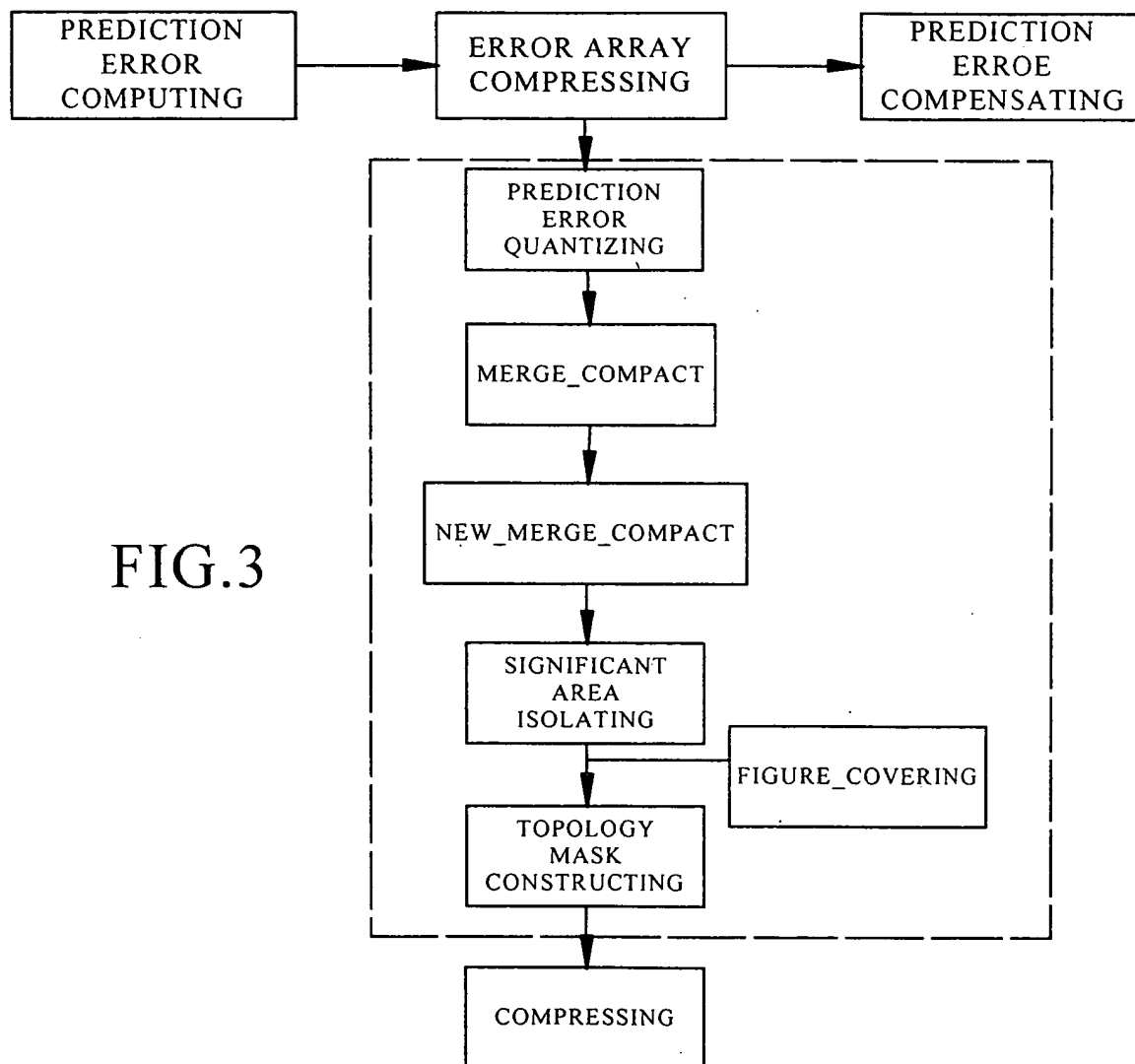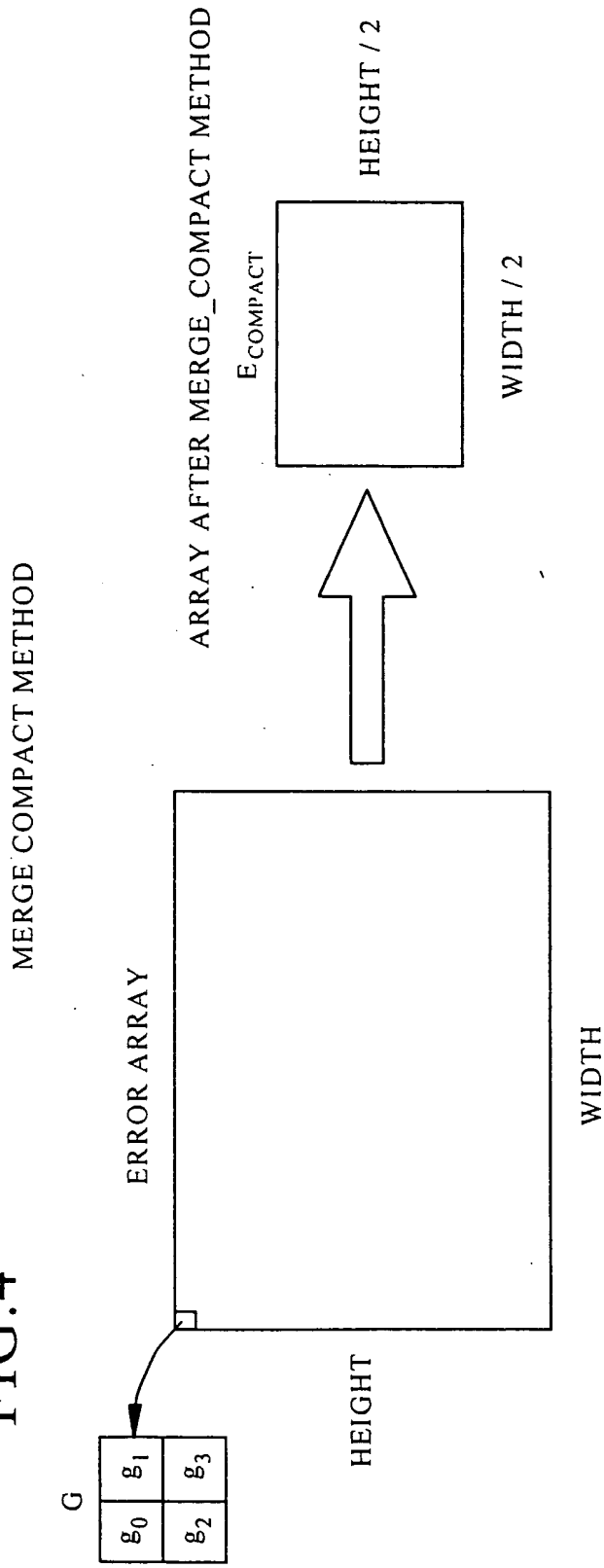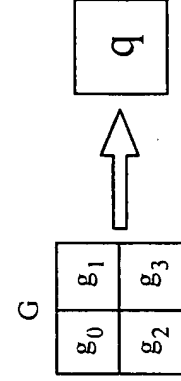| g_0	g_1
g_2	g_3

G

q

$E_{COMPACT}$ FORMING CONDITIONS:

1. $g_0 = g_1 = g_2 = g_3 = x \Rightarrow q = x.$

2. $g_i > 0, i = \overline{0,3} \Rightarrow q = g_{min}.$
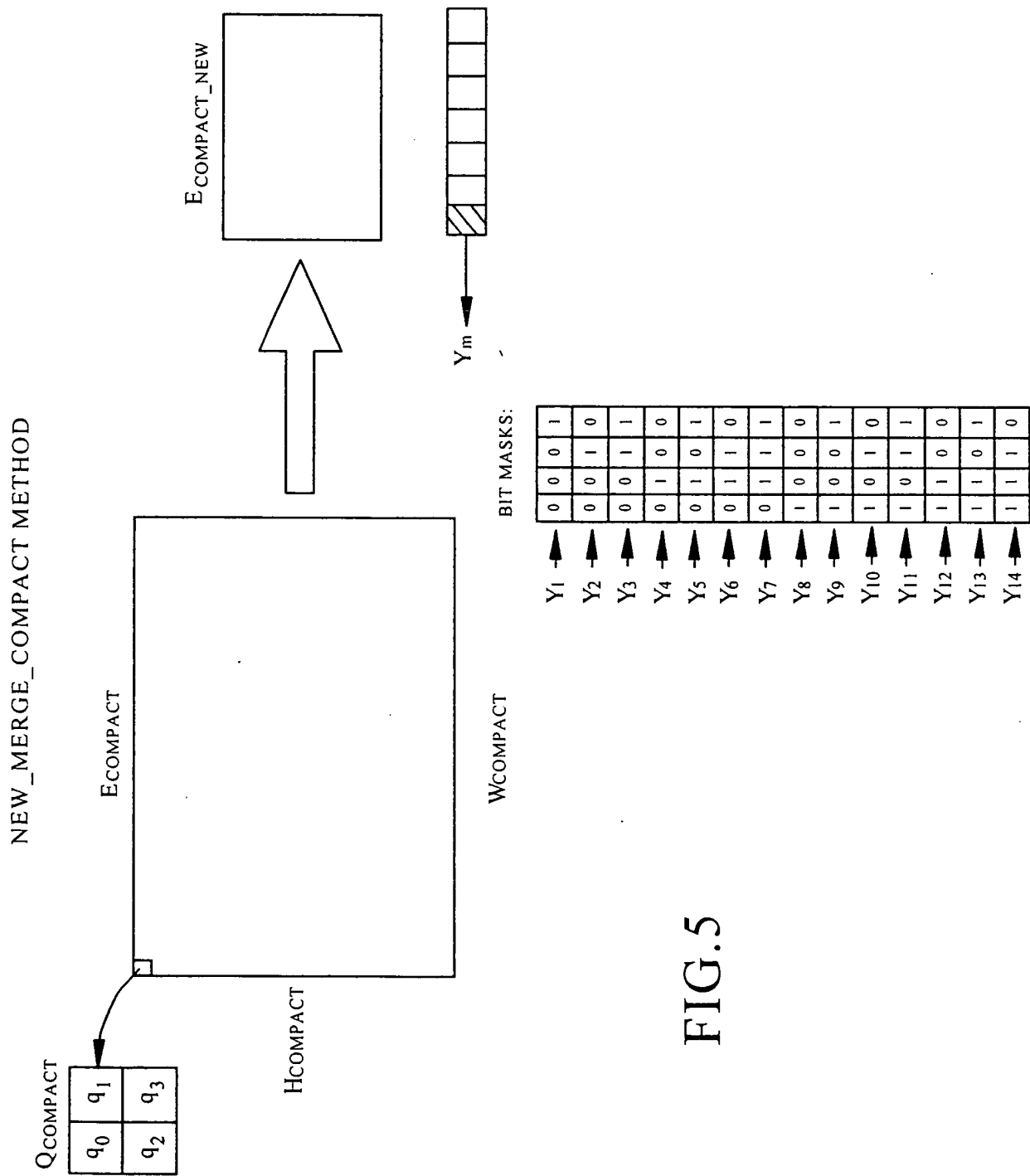
3. $g_i < 0, i = \overline{0,3} \Rightarrow q = g_{min}.$

4. $g_i < 0 \& g_i > 0 || g_i = 0, i = \overline{0,3} \Rightarrow q = 0.$

NEW_MERGE_COMPACT METHOD

$Q_{COMPACT}$

q_0	q_1
q_2	q_3

$E_{COMPACT}$

$H_{COMPACT}$

$W_{COMPACT}$

$E_{COMPACT\_NEW}$

Y_m

BIT MASKS:

Y_1	0	0	0	1
Y_2	0	0	1	0
Y_3	0	0	0	1
Y_4	0	1	0	0
Y_5	0	0	0	1
Y_6	0	1	1	0
Y_7	0	0	1	1
Y_8	1	0	0	0
Y_9	0	0	0	1
Y_{10}	1	1	0	0
Y_{11}	1	1	1	1
Y_{12}	1	0	0	0
Y_{13}	1	0	1	1
Y_{14}	1	1	1	0

FIG.5

FIG.6

NEW_MERGE_COMPACT METHOD EXAMPLE

1. $Q_{COMPACT}$

-5	-3
8	3

$S_+ = 11$, $S_+ > S_-$
$S_- = 8$.

$\Rightarrow$

2.

0	0
8	3

$\Rightarrow$ BIT MASK $\Rightarrow$

Y_3 $\Rightarrow$

| 0 | 0 | 1 | 1 |

$\Rightarrow Y_3$

TO M ARRAY

3.

0	0
8	3

$3 < 8$ $\Rightarrow$ $q_{NEW} = 3 + k$

FIG.7

SIGNIFICANT AREA ISOLATING

ISOLATED AREA

T | B | L | R

2 BYTES

FIG.8

FIGURE COVERING METHOD


```
0000xxxxxx0x0000
000000xxx000000x
0000000xxx0x000xx
xxxxxxxxxxx0000xxx
x0xx000xxxxx00000xx
000000xxxx00000xxxx
00000xxxx000000xxx
0000000xxxx0000xx
```

HEIGHT

ERROR ARRAY
FRAGMENT

WIDTH
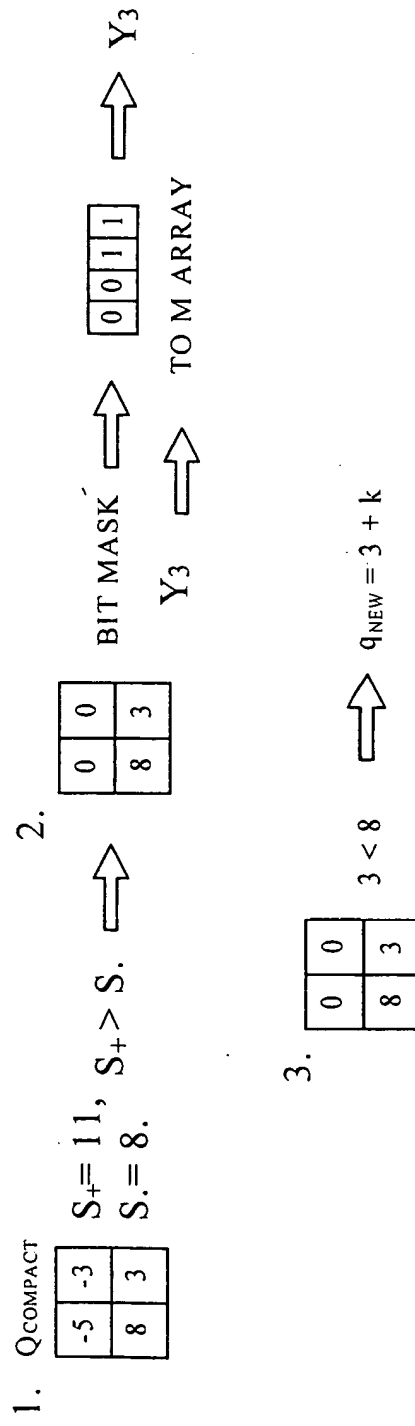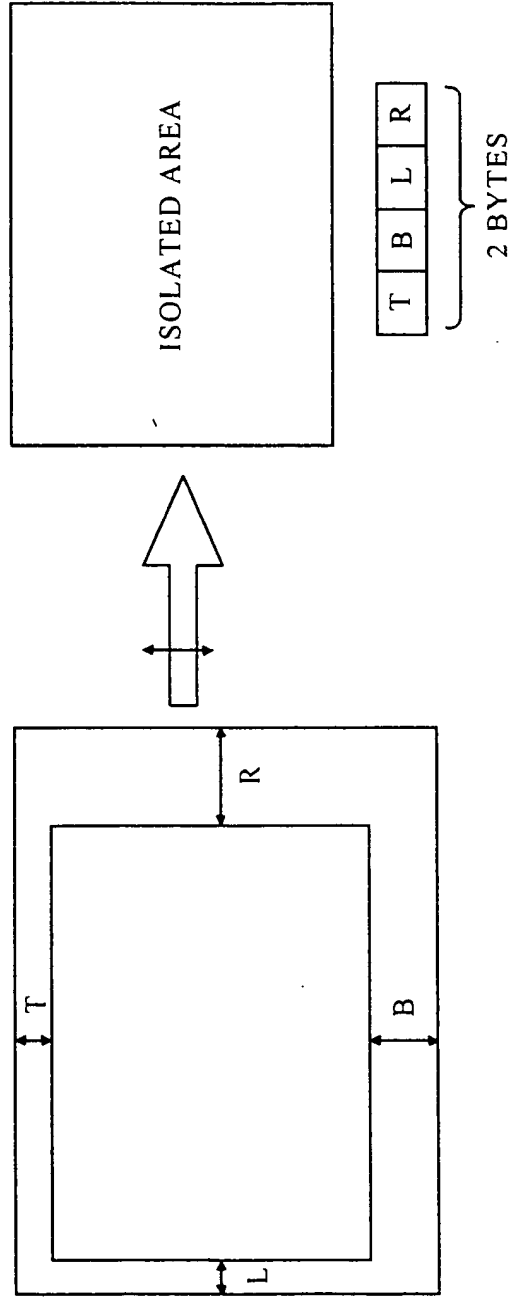
FIG.9

GEOMETRIC FIGURE TYPES USED FOR FIGURE COVERING
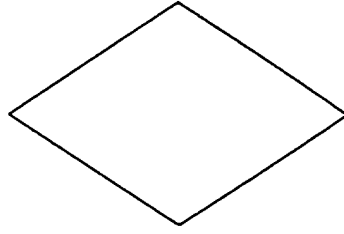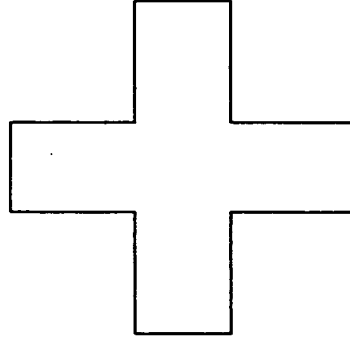METHOD AND DATA WRITING ORDER

FIGURE TYPES:
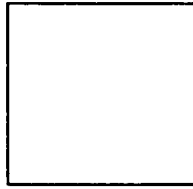
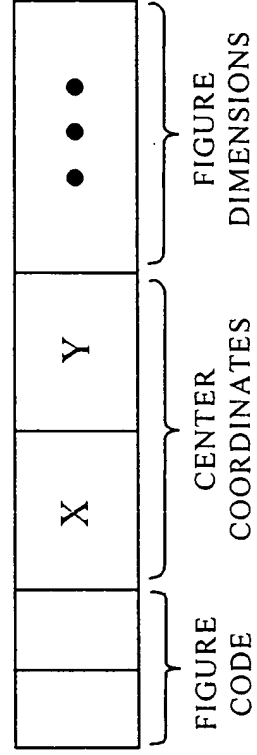RECTANGLE   SQUARE   RHOMBUS   CROSS

DATA WRITING ORDER:

FIGURE   CENTER   FIGURE
CODE   COORDINATES   DIMENSIONS

FIG.10

TOPOLOGY MASK CONSTRUCTING

ARRAY OF NONZERO ELEMENTS El   ARRAY OF SIGN S

$e > 0, s = 0;$
$e < 0, s = 1.$

ARRAY OF ABSOLUTE VALUES Abs

a

Ac

BIT
MASK
ARRAY:
B

b Ac FRAGMENT:

El

| 3 | 4 | 1 | 2 | -1 |

Abs

| 3 | 4 | 1 | 2 | 1 |

S

| 0 | 0 | 0 | 0 | 1 |

$$\begin{matrix} 3 & 0 & 4 \\ 0 & 0 & 1 \\ 2 & 0 & -1 \end{matrix}$$

$$\begin{matrix} 1 & 0 & 1 \\ 0 & 0 & 1 \\ 1 & 0 & 1 \end{matrix}$$